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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,420	04/15/2004	Masaaki Matsushita	03500.018071	6474

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EXAMINER	
TRINH, THANH TRUC	
ART UNIT	**PAPER NUMBER**
1753	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/824,420	MATSUSHITA ET AL.	
	Examiner	Art Unit	
	Thanh-Truc Trinh	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/23/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites a limitation "one electrodes". It is unclear whether more than one electrode is required by this limitation.

Claim 8 is rendered indefinite by the phrase "stacked solar cells having an amorphous mircrocrystal silicon type three-layer structure" which unclear as to what type of solar cell structure is referred to. For example, silicon can be either amorphous or microcrystal, but not both. "Three-layer structure" can also be a stacked solar cell or a triple junction solar cell.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-4 and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Uchihashi et al. (US Patent 5951785).

See Figures 1-2, 10, 16 and 18-25.

Regarding claims 1 and 6, as seen in Figures 1, 16 and 18-25, Uchihashi et al. disclose a solar cell module with power converters. It is the Examiner's position that "a solar cell module" is a plurality of modules 1 (as shown in Figures 18-19 and 23-25) of the prior art arranged in a side-by-side fashion as shown in Figure 16. The solar cell module comprises a plurality of solar cells (11a as shown clearly in Figure 1) having a flexibility; a covering member (including 11b, 11c, 50 and 53 as shown in Figures 1 and 18-25); a plurality of power converters 2 provided on a surface (50b) of the covering member, wherein the solar cells form a plurality of solar cell groups 11 comprising two or more solar cells 11a. (See Figures 1, 16 and 18-25). Uchihashi et al. are silent about the solar cells electrically connecting to each other with a gap therebetween via an interconnector; however, there must be an electrical connection between solar cells with a gap therebetween via an interconnector for the module to produce an electrical output. The power converter is arranged at the edge of the solar cell module as shown in Figures 18 and 21, and parallel to the gap between the solar cells as shown in Figures 1 or 10, therefore the power converter is arranged out of an extension line of the gap. Each power converter 2 is connected to an output of one solar cell group 11 via connector 53a. (See Figures 23-24). Outputs of the respective power converters are all connected in parallel to each other. (See col. 6 lines 9-11). When a plurality of modules 1 connected in parallel, the power converters 2 have to be connected in parallel, since

only the power converters 2 have the availability for connection. It is the Examiner's position that practically all the solar cells have some degrees of flexibility, since the flexibility depends on the thickness of solar cells and most solar cells are very thin.

Regarding claim 3, Uchihashi et al. describe a wiring member electrically connecting the outputs of the plurality of power converters is buried in the covering member of the solar cell module. (See Figures 23 and 24)

Regarding claim 4, Uchihashi et al. describe the plurality of power converters are placed on a light-incident surface side of the covering member of the solar cell module. (See Figures 18-19 and 21-25)

Regarding claim 7, Uchihashi et al. describe the output of a group (or photovoltaic section 11) of solar cells connected to the converter 2. (See col. 11 lines 13-15). Electrodes of the solar cells are all inherently connected to form one power source line of the power converters.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchihashi et al. (US Patent 5951785) in view of Geissler et al. (US Patent 4443840).

Regarding claim 2, Uchihashi et al. disclose a solar cell module with converters as described in claim 1.

Uchihashi et al. do not teach the power converters are DC-DC converters that step up a DC voltage output from the solar cells.

Geissler et al. teach the power converters are DC-DC converters that step up a DC voltage output from the solar cells. (See "Summary of the Invention")

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Uchihashi et al. by using DC-DC converters as taught by Geissler et al., because it would transform up the low input voltage of solar cells. (See col. 2 lines 50-54)

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchihashi et al. (US Patent 5951785).

Regarding claim 5, Uchihashi et al. describe a solar cell module with power converters as described in claim 1, wherein the plurality of power converters are placed on a surface of the covering member outside light-incident surfaces of the solar cells (See Figures 18-25).

Uchihashi et al. do not explicitly teach the wire connecting inputs of the power converters to the outputs of solar cell group is shortest. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Uchihashi by minimize the length of wire connection between the solar cell outputs and power converter inputs, because it would minimize material cost and power lost from wire resistant.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchihashi et al. (US Patent 5951785) in view of Yang et al. (1994 IEEE First World Conference).

Regarding claim 8, Uchihashi et al. disclose a solar module with power converters as described in claim 1.

Uchihashi et al. do not teach the solar cells comprising stacked solar cells having an amorphous microcrystal silicon type three-layer structure.

Yang et al. teach using stacked solar cells having an amorphous microcrystal silicon type three-layer structure. (See Figure 1, Component Cell Optimization and Improvement of The "Tunnel" Junction)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the solar cell module of Uchihashi et al. by using stacked

solar cells having microcrystal silicon type three-layer structure as taught by Yang et al., because it would improve the cell performance. (See Abstract of Yang et al.)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Truc Trinh whose telephone number is 571-272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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5/14/2007